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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/501,447

Applicant(s)

BADER, AUGUSTINUS

Examiner

Simon Vainberg

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 39-76 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 39-62 and 67-76 is/are rejected.
- 7) ☒ Claim(s) 63-66 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 08/03/2004.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 43 is objected to because of the following informalities: word "claim " is printed instead of the word "claimed".

Appropriate correction is required.

Claim 72 is objected to because of the following informalities: claim called element 39 "a sealing structure" but specification call the same element 39 "a covering structure" (see paragraph 087). Appropriate correction is required.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 39, 40, 43, 44 and 47 (new) are rejected under 35 U.S.C. 102(b) as being anticipated by Christian et al. (US Patent 5267791).

Regarding claim 39, the Christian et al. reference teaches a device for raising or cultivating cells in a container-like receptacle which comprises a base (4); and at least one lid (2) (called closure body), wherein the at least one upper lid (12) is connected to the receptacle in a pressure-tight manner, and the receptacle or the upper lid (12) is provided with at least one inlet bore (14) (called port) for one of the introduction and withdrawal of culture medium and oxygen (see Fig. 1 and column 3 lines 36-54).

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Regarding claim 40, the Christian et al. reference teaches the device as claimed in claim 39, wherein a cells can be raised or cultivated directly or indirectly in or under the upper lid and on a base (see column 3 lines 52-55).

Regarding claim 43, the Christian et al. teaches the device as claimed in claim 39, wherein the upper lid and the receptacle are connected to one another by a threaded connection (see Fig. 3 numbers 27 and 29 and column 4 lines 15-19).

Regarding claim 44, the Christian et al. reference teaches the device as claimed in claim 39 wherein the upper lid is provided with the inlet bore and an outlet bore.

Christian et al. teaches that upper lid (2) has two treaded ports (14) and (16) (see Fig. 1), which can be used as inlet and outlet ports.

Regarding claim 47, the Christian et al. teaches the device as claimed in claim 43, wherein the threaded connection is formed by an internal thread in the upper lid and by an external thread in the receptacle (see Fig. 3 numbers 27 and 29 and column 4 lines 15-19).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claim 41 (new) is rejected under 35 U.S.C. 103(a) as being unpatentable over Christian et al. (US Patent 5267791) as applied to claim 39 above, and further in view of Willemot et al. (US Patent 5219755).

Regarding claim 41, the Christian et al. reference teaches the device as claimed in claim 39, except the receptacle is provided on the base with a tray into which the cells can be placed.

The Willemot et al. reference teaches the receptacle (1) (called vessel) with a tray (6) (called element or basket) for housing a germ recipient (see column 2 lines 30-35 and drawing).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Christian et al. by including in the vicinity of the base a basket as taught by Willemot et al. because it simplifies the removal of the cells from the vessel.

6. Claims 42, 48, 49, 51, 70 (new) are rejected under 35 U.S.C. 103(a) as being unpatentable over Christian et al. (US Patent 5267791) as applied to claim 39, 43, 49 above, and further in view of Yoshio (JP 2000078963).

Regarding claim 42, the Christian et al. teaches the device as claimed in claim 39, except the receptacle has a cylindrical middle part closed off at both ends by the upper lid and the lower lid which forms the base of the receptacle.

The Yoshio reference teaches high-pressure culture jar that has a cylindrical middle part (40) closed off at both ends by the upper lid (20) and the lower lid (30), which form the base of the receptacle (see Fig. 1 and Abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Christian et al. by fabricating the receptacle with upper and lower lid as taught by Yoshio because it allows to conduct a high pressure fermentation and simplifies the cleaning of the apparatus.

Regarding claim 48, the Christian et al. teaches the device as claimed in claim 43, except that the threaded connection is provided with at least one sealing ring.

The Yoshio reference teaches a sealing ring (58) between the receptacle and lid (see Fig. 13 and paragraph 0033 of Translated copy).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Christian et al. by placing the seal ring between receptacle and lid as taught by Yoshio because it prevents the leak of bacterial culture from the bottom of the reactor or leak a gas from the headspace of the reactor.

Regarding claim 49, the Christian et al. reference teaches the device as claimed in claim 39, except the receptacle is designed as a cylindrical middle part, both ends of the middle part being closed off respectively by the upper lid and the lower lid, both lids being provided in each case with an extension ring which extension rings at least partially enclose the cylindrical middle part sealingly from the outside.

Christian et al. teaches receptacle with cylindrical middle part (4) and upper lid with extension ring (24) (called peripheral skirt portion) which at least partially enclose

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the cylindrical middle part sealingly from the outside (see Fig. 1 and 2, and column 4 lines 20 and 21).

Yoshio teaches culture jar with lower and upper lids (see Fig. 1), except the lid has an extension part.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Christian et al. by using two lids as taught by Yoshio because it simplifies disassembling and cleaning of the reactor.

Regarding the claim 51, the Christian et al. and Yoshio references teach the device as claimed in claim 49, wherein the extension rings each seal off the middle part from the outside via a threaded connection.

Christian et al. teaches the extension ring seal off the middle part from the outside via a threaded connection (see Fig. 1 and 2, and column 4 lines 20 and 21).

Regarding claim 70, the Christian et al. reference teaches the device as claimed in claim 39 except the receptacle is formed by an upper lid and a lower lid with sealing rings being provided for sealing between the two lids.

The Yoshio reference teaches receptacle, which is formed by an upper lid (20) and a lower lid (30) with sealing rings (23) and (33) being provided for sealing between two lids (see Fig. 2 and 7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Christian et al. by fabricating a bioreactor

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with upper and lower lids, and placing the sealing rings between two lids as taught by Yoshio because it allows to conduct a high pressure fermentation and simplifies the cleaning of the apparatus.

7. Claim 45 (new) is rejected under 35 U.S.C. 103(a) as being unpatentable over Christian et al. (US Patent 5267791) and Yoshio (JP 2000078963) as applied to claim 39 and 42 above, and further in view of Falkenberg et al. (US Patent 5449617).

Regarding claim 45, the Christian et al. and Yoshio teaches the device as claim in claim 42, except that the both upper and lower lids respectively, are provided in each case with at least one bore, the at least one inlet bore being arranged in one upper lid and the at least one outlet bore being arranged in the lower lid.

The Falkenberg reference teaches a culture vessel (1) with two lids (34 and 35) (called caps) each of them has one bore (called opening) (see Fig.6 and column 8 lines 25 -28).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the inventions of Christian et al, and Yoshio by fabricating two ports on both lids as taught by Falkenberg et al. because such design allows to introduce the media to reactor through the upper port and remove media or water after reactor's cleaning through the lower port.

8. Claims 46 (new) is rejected under 35 U.S.C. 103(a) as being unpatentable over Christian et al. (US Patent 5267791) as applied to claim 43 above and further in view of Oilar (US Patent 5005717).

Regarding claim 43, the Christian et al. reference teaches the device as claimed in claim 43, except that the threaded connection between the upper lid and the receptacle is formed by an internal thread in the receptacle and by an interacting external thread in at least one of the upper or lower lid or lids respectively.

The Oilar reference discloses receptacle (called container) with internal thread (34) and lid 14 with external thread (36) (see Fig.2 and column 4 lines 39 and 40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Christian et al. by fabricating the threaded connection between the upper lid and the receptacle by an internal thread in the receptacle and by an interacting external thread in at least one of the upper or lower lid or lids as was taught by Oilar, because it simplifies the assembly of the reactor.

9. Claim 50 (new) is rejected under 35 U.S.C. 103(a) as being unpatentable over Christian et al. (US Patent 5267791) and Yoshio (JP 2000-078963) as applied to claim 49 above and further in view of Willemssen (US 2004/0020889).

Regarding the claim 50, the Christian et al. and Yoshio references teach the device as claimed in claim 49, except the indication that extension rings each seal off the middle part from the outside via a clamp connection.

The Willemssen reference teaches a cap with extension ring for airtight seal of container such as jar, wherein the cap can be arranged to the container by means of a clamp connection (see paragraph 0021 lines 5 and 6).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the inventions of Christian et al. and Yoshio by including

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means of clamp connection as taught by Willemsen because it provides fast and airtight connection between the lid and container.

10. Claim 52 (new) is rejected under 35 U.S.C. 103(a) as being unpatentable over Christian et al. (US Patent 5267791) as applied to claim 39 above, in view of Gerhard (US Patent 4412626).

Regarding the claim 52, the Christian et al. reference teaches the device as claimed in claim 39, except the indication that receptacle and the at least one upper lid is provided on both sides with a tensioning ring for introducing rolling or turning movements for the receptacle and the last least one upper lid.

The Gerhard reference teaches a cylindrical tank and a pair of tensioning rings surrounding the tank near the ends thereof, each ring being composed in the peripheral direction of the tank of at least two sections (see column 1 lines 60-64).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Christian et al. by including a pair of tensioning rings surrounding the tank as taught by Gerhard because they can provide detachable connection between the tank and outer frame.

Claims 53, 54, 56, 68 and 69 (new) are rejected under 35 U.S.C. 103(a) as being unpatentable over Christian et al. (US Patent 5267791), as applied to claim 39, 53 above, in view of Hung et al. (US 2002/0106625).

Regarding the claim 53, the Christian et al. reference teaches the device as claimed in claim 39, except a pressurizing means for the receptacle is connected to the inlet bore.

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The Hung et al reference teaches receptacle (called bioreactor) with pressurizing means, wherein hydrostatic pressurization is applied by means comprising a reservoir, a pump and tubing interconnecting said growth chamber, said reservoir and said pump, so as to allow pressurization of liquid growth medium from reservoir in response to force applied by said pump (see claim 36).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Christian et al. by including the pressurizing means as taught by Hung et al. because it allows to enhance matrix elaboration by chondrocytes seeded in three dimensional scaffolds and also to improve the functional properties of cells cultivated on scaffolds under combinations of physiologic hydrostatic pressure and deformational loading.

Regarding claim 54, the Christian et al. and Hung et al. reference teach the device as claimed in claim 53, wherein the pressurizing means is designed as a cylinder/piston unit.

The Hung et al. reference teaches cylinder/piston unit (see claim 37, Fig. 1 and 3 and also paragraphs 0057 and 0058).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Christian et al. by including the cylinder/piston unit as taught by Hung et al, because it allows to gradually regulate the pressure in the chamber.

Regarding claim 56, the Christian et al. and Hung et al. reference teach the device as claimed in claim 53, wherein the pressurizing means can subject the interior of the receptacle with the cells to alternating pressure loads.

The Hung et al. reference teaches that the amplitude of the hydrostatic pressure and the amplitude of the deformational loading are modified over time as matrix elaboration proceeds (see claims 6-8, 21 and paragraphs 0059 and 0062).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Christian et al. by fabricating pressurizing means which can provide the interior of the chamber with the cells to alternating pressure loads as taught by Hung et al. because it allows to grow the cells which subjected to applied environmental pressurization.

Regarding claim 68, the Christian et al. and Hung et al. reference teach the device as claimed in claim 39, wherein, for exerting pressure internally, a hydraulic or pneumatic means with a movable plate is arranged in the receptacle.

The Huang reference teaches bioreactor with a hydraulic pressure assembly (42) (see paragraph 0055 second line) with compression loading platen arranged in the interior chamber 22 of bioreactor 2 (see paragraph 0057 last line, paragraph 0058 and Fig. 1 and 3). Displacement actuator rod (32) moves the loading platen by air cylinder assembly (86) (see paragraph 0058).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Christian et al. by fabricating the

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hydraulic means including movable platen as taught by Hung et al. because it allows to create the required pressure in the chamber.

Regarding claim 69, the Christian et al. and Hung et al. reference teach the device as claimed in claim 39, wherein the cells are arranged in a gel.

The Huang reference teaches that chondrocyte-seeded agarose disks (28) have been positioned within chamber (22) (see paragraph 0058 bottom five lines) and agarose disks comprises agarose gel (see paragraph 0062).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Christian et al. by using the gel disks for cultivating of the cells because gel disks provide compatibility for the most of the animal cells and they also can sustain essential mechanical loading without permanent deformation.

Claim 55 (new) is rejected under 35 U.S.C. 103(a) as being unpatentable over Christian et al. (US Patent 5267791) and Hung et al. (US 2002/0106625) as applied to claim 53 above in view of Bishop et al. (US Patent 6071088).

Regarding claim 55, the Christian et.al. and Hung et al. references teach the device as claimed in claim 54, except the inlet bore opening into a piston space of the cylinder/piston unit is provided with a check valve.

The Bishop et al. reference teaches a piston pump with inlet (26) and check valve (28) which is provided in the inlet (26) (see column 4 lines 27-32).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Christian et al. and Hung et al. by

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including a check valve in the inlet of piston pump as taught by Bishop et al., because it prevents a fluid flow out of the pump chamber via inlet.

Claims 57-60 (new) are rejected under 35 U.S.C. 103(a) as being unpatentable over Christian et al. (US Patent 5267791), as applied to claim 39 above, in view of Kadouri et al. (US Patent 5705390).

Regarding claim 57, the Christian et al. reference teaches the device as claimed in claim 39, except that at least one upper lid of the receptacle is provided with a suspension means on which a platform for receiving the cells is arranged.

The Kadouri et al. reference teaches upper lid with suspension means (39) (called support pillars) on which platform (36) (called cell basket) is arranged (see Fig.2 and column 4 lines 14-19).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Christian et al. by fabricating the upper lid with suspended cell basket for the cell cultivation as taught by Katsuya et al. because it simplifies the process of cells removing from reactor by lifting the lid with attached basket.

Regarding claim 58, the Christian et al. and Kadouri et al. reference teach the device as claimed in claim 57 wherein the suspension means is formed by rods which extend from the upper lid into the interior of the receptacle and at whose lower end the platform is arranged.

The Kadouri et al. reference teaches rods (39) (called support pillars) which extend from the upper lid into the interior of the receptacle (called bioreactor) and at whose lower end the platform (38) is arranged (see Fig. 2 and column 4 lines 15-19).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Christian et al. by including a suspension means which is formed by rods as taught by Kadouri et al. because it allows to support the platform inside the chamber and simplifies the process of platform removal.

Regarding claim 59, the Christian et al. and Kadouri et al. reference teach the device as claimed in claim 58, except the direct indication that the platform is connected to the rods in a detachable manner.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to make connection between the rods and platform in a detachable manner, since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art (see *Nerwin v. Ericnman*, 168 USPQ 177, 179).

Regarding claim 60, the Christian et al. and Kadouri et al. reference teach the device as claimed in claim 59, except the platform can be connected to the rods by a clip connection.

It would have been obvious matter of design choice to connect rods to platform by a clip connection, since applicant has not disclosed that clip connection solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with another type of connection.

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Claim 61 (new) is rejected under 35 U.S.C. 103(a) as being unpatentable over Christian et al. (US Patent 5267791) and Kadouri et al. (US Patent 5705390), as applied to claim 57 above, in view of Yoshio et al. (JP 2000078963).

Regarding to claim 61, the Christian et al. and Kadouri et al. reference teach the device as claimed in claim 57, except the receptacle has a cylindrical middle part which is closed at both ends by an upper lid and a lower lid.

The Yoshio et al. reference teaches the high-pressure culture jar that has a cylindrical middle part, which is closed at both ends by an upper lid and a lower lid (see Fig. 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the inventions of Christian et al. and Kadouri et al. by fabricating reactor with upper lid and a lower lid as taught by Yoshio, because it simplifies disassembling and cleaning of the reactor.

Claim 62 (new) is rejected under 35 U.S.C. 103(a) as being unpatentable over Christian et al. (US Patent 5267791) and Kadouri et al. (US Patent 5705390), as applied to claim 57 above, in view of Schwarz et al. (US Patent 5763279).

Regarding to claim 62, the Christian et al. and Kadouri et al. reference teach the device as claimed in claim 57, except the receptacle is provided as a two-chamber system for raising or cultivating two cell cultures.

The Schwarz et al. reference teaches a bioreactor with two chambers for producing cell and tissues (see Fig.4 and Abstract).

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the inventions of Christian et al. and Kadouri et al. by fabricating two chambers bioreactor as taught by Schwarz et al. because it allows to study the cell growth on different media.

Claim 67 (new) is rejected under 35 U.S.C. 103(a) as being unpatentable over Christian et al. (US Patent 5267791) as applied to claim 39 above, in view of DiMilla et al. (US Patent 6855542. Provisional Application No. 60/342992, filed on December 21, 2001. The subject matter of the Provisional Application related to claim 67 is encompassed by US Patent 6855542).

Regarding to claim 67 the Christian et al. teaches the device as claimed in claim 39, except the receptacle is provided with expandable elements for exerting pressure internally on the cells.

DiMilla et al. reference teaches modular chambers for culturing cells in which the volume of a chamber can be adjusted without comprising the seal or sterility of the chamber (see Abstract and column 8 lines 42-47 and Fig. 6A and 6B). DiMilla et al. teaches expendable elements (50) (called compressible gasket). The chamber is converted between the different-volume configuration by changing the applied load and compression on the gasket (50) (see column 10 lines 59-61). The gasket (50) is composed of one or more materials that have mechanical compatibility with the applied loads. The applied loads for each configuration must be great enough that the gasket compress to form a seal that withstands the pressure exerted by the biological liquid (15) within the compartment (20) for that configuration (see column 11 lines 6-12).

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the inventions of Christian et al. by installing an expandable elements as taught by DiMilla et al. because it would allows one to change the volume of the chamber for culturing the cells at different conditions.

Claim 71 (new) are rejected under 35 U.S.C. 103(a) as being unpatentable over Christian et al. (US Patent 5267791), as applied to claim 39 above, in view of Schwarz et al. (US Patent 5763279).

Regarding to claim 71, the Christian et al. teaches the device as claimed in claim 39, except the base of the receptacle is formed by a gas-permeable membrane.

The Schwarz et al. reference teaches gas permeable bioreactor (see Abstract and Fig. 10). The bioreactor (2) is made of tubular vessel (4) with base (called outer walls) (24) constructed at least partially from a gas permeable material (6) (see column 4 lines 40-43).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Christian et al. by fabricating the base of reactor from gas permeable material as taught by Schwarz et al. because it allows removal of the gases from the reactor during the cell growth and also supplies oxygen to bioreactor without turbulence of the cells cased normally by the air sparging.

Claim 72 (new) is rejected under 35 U.S.C. 103(a) as being unpatentable over Christian et al. (US Patent 5267791) and Schwarz et al. (US Patent 5763279) as applied to claim 71 above, in view of Knappe et al. (US Patent 5215312).

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Regarding claim 72, the Christian et al. and Schwarz et al. references teach the device as claimed in claim 71, except the gas-permeable membrane is covered by a sealing structure.

The Knappe et al. reference teaches that it is "desirable to provide external mechanical protection of the PTFE membrane during assembly or in later operation. Such protection may be obtained by providing the retaining rings...with protective struts 32, 42, or 52. Such struts serve to protect the face of the PTFE membrane. These protective struts, as can be seen in FIG. 4, are arranged in a cross shape" (see column 2 lines 9-16).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the inventions of Christian et al. and Schwarz et al. by installing a protective covering structure as taught by Knappe et al. because such structure would allow one to protect the membrane during assembly and operation of the bioreactor without effecting on gas-permeability of the membrane.

Claim 73 (new) is rejected under 35 U.S.C. 103(a) as being unpatentable over Christian et al. (US Patent 5267791) as applied to claim 39 above, in view of Matsuo et al. (US Patent 5376548).

Regarding claim 73, the Christian et al. reference teaches the device as claimed in claim 39, except that at least part of the inside walls of the receptacle is provided with a peel-off film.

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The Matsuo et al. reference teaches that a culture film (4) arranged inside walls (11, 12 and 13, 14) of the bioreactor and cells can be separated from the culture film (see Fig. 1 and column 5 lines 39-42).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the inventions of Christian et al. by installing a culture film as taught by Matsuo et al, because such film provides the base for settled cells and protects the cells during the transfer procedure.

Claim 74 (new) is rejected under 35 U.S.C. 103(a) as being unpatentable over Christian et al. (US Patent 5267791) as applied to claim 39 in view of Anderson et al. (US Patent 5989913).

Regarding to claim 74, the Christian et al. teaches the device as claimed in claim 39, except the receptacle is designed as a multi-chamber system.

The Anderson et al. reference teaches a bioreactor with multi-chambers 30a, 30b and 30n (called sub-chambers (see Fig. 8 lines 5-7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Christian et al. by composing multi-chambers as taught by Anderson et al. because it would allow one to study the effect of media composition on the growth of different types of cells.

Regarding claim 75, the Christian et al. and Anderson et al. reference teach the device as claimed in claim 74, wherein a porous support is arranged between the second chamber and the third chamber.

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The Anderson reference teaches a bioreactor system with three sub-chambers (30a, 30b and 30n), wherein the intermediate filter element (42) (which inherently is porous) is arranged between second chamber (30b) and third chamber (30a) (see Fig. 8 and column 10 lines 5-8).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Christian et al. by installing a filter element between second chamber and third chamber as taught by Anderson et al. because it allows for exchange of nutrients and waste products between two chambers.

Regarding claim 76, the Christian et al. and Anderson et al. reference teach the device as claimed in claim 74. The claim 76 contains the method limitations and does not limit the structure of device according to claim 74. The modified device of Christian et al. and Anderson et al. references is capable to be used for introduction of a culture medium in a first step, and introduction a gaseous medium in a second step.

Allowable Subject Matter

7. Claims 63-66 (new) are objected to as being dependent upon a rejected base claim 39, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter:

With respect to claim 63 the prior art of record fails to teach or fairly suggest a

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device recited in claim 63 wherein a magnetizable pressure disk (25) is arranged in the receptacle (1) and can be moved by a magnetizing means (24) in order to exert pressure internally on the cells (7).

With respect to claim 64 the prior art of record fails to teach or fairly suggest a device as claimed in claim 63, wherein the pressure disk (25) has a grid or mesh structure.

With respect to claim 65 the prior art of record fails to teach or fairly suggest a device as claimed in claim 63, wherein the pressure disk (25) has a grid or mesh structure.

With respect to claim 66 the prior art of record fails to teach or fairly suggest a device as claimed in claim 63, wherein the cells (7) are arranged on a support structure (27a), which is acted upon by the pressure disk (25) from one or both sides.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Simon Vainberg whose telephone number is 571-270-3150. The examiner can normally be reached on Monday- Thursday 7:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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